



**Automatic Power Transfer System
Installation, Operating and Maintenance Manual
For Models 1000, 1500, 3000, 3500**



Typical Model 3500 shown.

NOTE TO INSTALLER: Please leave this manual with customer for future reference.

The serial number of this unit may be found on a label affixed to the inside lower left of this unit. Please note your model number and serial number here for future reference.

MODEL NUMBER _____

SERIAL NUMBER _____

DATE OF PURCHASE _____

DEALER NAME/PHONE _____

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SAFETY PRECAUTIONS:

CAUTION This symbol refers to a hazard or unsafe practice that can result in personal injury or product or property damage.

WARNING This symbol refers to a hazard or unsafe practice that can result in severe personal injury or death.

DANGER This symbol warns of immediate hazards that will result in severe personal injury or death.

WARNING PLEASE READ THIS MANUAL IN ITS ENTIRETY BEFORE ATTEMPTING TO UNPACK, ASSEMBLE, INSTALL, OPERATE OR MAINTAIN THIS EQUIPMENT. HAZARDOUS VOLTAGES ARE PRESENT INSIDE TRANSFER SWITCH ENCLOSURES THAT CAN CAUSE DEATH OR SEVERE PERSONAL INJURY. FOLLOW PROPER INSTALLATION, OPERATION AND MAINTENANCE PROCEDURES TO AVOID THESE VOLTAGES.

ALL Gen/Tran PowerStay® transfer systems should be installed by a professional electrician familiar with electrical wiring and codes, and experienced in working with generators. Gen/Tran accepts no responsibility for accidents caused by incorrect and/or improper installation. The PowerStay® Automatic Transfer System is designed and intended for indoor installation with 125/250 volt, single-phase applications ONLY.

TRANSFER SWITCH EQUIPMENT COVERED BY THIS DOCUMENT IS DESIGNED AND TESTED TO OPERATE WITHIN ITS NAMEPLATE RATINGS. OPERATION OUTSIDE OF THESE RATINGS MAY CAUSE THE EQUIPMENT TO FAIL RESULTING IN DEATH, SERIOUS BODILY INJURY AND/OR PROPERTY DAMAGE. ALL RESPONSIBLE PERSONNEL SHOULD LOCATE THE DOOR-MOUNTED EQUIPMENT NAMEPLATE AND BE FAMILIAR WITH THE INFORMATION PROVIDED THEREIN.

CAUTION It is inappropriate to use PowerStay® Automatic Transfer Switches to operate a central air conditioning system unless the generator can deliver the required Locked Rotor Amps required by the air conditioning system. Connection of a central air conditioning system to this system that exceeds the ratings of the system or generator can be dangerous, and may cause damage to the transfer switch, generator, or air conditioning equipment and may void the warranty.

Keep the transfer system closed. Make sure only authorized personnel have access to the cabinet. Due to the serious shock hazard from high voltages within the cabinet, all service and adjustments to the transfer switch must be performed by an electrician or authorized service personnel. All possible contingencies which may arise during installation, operation or maintenance, and all details and variations of this equipment do not purport to be covered by these instructions. If further information is desired by purchaser regarding his particular installation, operation or maintenance of particular equipment, contact Gen/Tran.

SECTION 1 - INTRODUCTION

1.1 General Description

The PowerStay® Automatic Power Transfer System, used in conjunction with a standby generator, provides a safe, convenient, robust way to maintain power in a home or business during a utility outage. The system senses when utility power is lost, triggers a permanently installed generator to start, and transfers selected circuits to generator power according to priority assigned at installation. It is shipped from the factory with the following parts:

- ◆ Transfer Switch Module with User Interface
- ◆ Wiring Harness
- ◆ Wire Connectors
- ◆ Conduit and Fittings
- ◆ Low Voltage Cable (50 feet)

Transfer switches are used to protect critical electrical equipment and appliances against the loss of utility power. The appliance's normal power source is the utility, backed up by a secondary (generator) power source. The transfer switch is connected to both the utility and generator sources and supplies the appliance with power from either the normal or secondary source. In the event that the power is lost from the normal source (utility), the transfer switch system transfers the load to the secondary (generator) source. Once utility power is restored to the home or building, the transfer switch transfers the load back to the normal source, and initiates generator engine shutdown.

In the generator mode, the Intelligent Load Management feature of the PowerStay® Automatic system manages up to 16 individual circuits or loads based on parameters set up at installation. As demand increases on higher-priority circuits, the system turns off less important circuits. This allows a larger number of loads – some intermittent – to be supported without nuisance tripping of the generator or investing in a larger generator. With the PowerStay® Automatic System, most applications can utilize a generator that has 25-40% less output than standard installations with a conventional automatic transfer switch.

In addition to Intelligent Load Management, the following features are incorporated into all PowerStay® Automatic systems:

- ◆ **Automatic Switching between utility and generator** – When the PowerStay system senses partial or total loss of electricity for up to 30 seconds, it automatically starts the generator (equipped with appropriate remote-starting capabilities), and transfers the circuits to generator power according to priority assigned upon installation.
- ◆ **Combined Transfer Switch and Subpanel in one enclosure** – Significantly reduces installation time, expense and complexity.
- ◆ **Built-in battery charger** – An integrated float charger charges the generator battery between uses, and won't boil the battery acid, prolonging battery life.
- ◆ **Programmable Generator Exerciser** – Tests generator on a regular interval (programmable from 1-28 days) to help maintain a reliable generator.
- ◆ **Generator Usage Monitor** – Tracks run time to help gauge fuel consumption (for gasoline or diesel powered gensets).
- ◆ **Programmable Alarm System** – Can be programmed to sound an alarm in case of expected low fuel levels.

The Smart Startup and Shutdown feature limits the generator from rapid, intermittent start-up and shutdown, thus prolonging generator life. Here's how it works:

- ◆ System waits up to 30 seconds after sustained power loss to start up generator
- ◆ Waits up to 30 seconds before transferring circuits
- ◆ Once utility power is restored, system waits one minute to re-transfer circuits back to utility power
- ◆ Five minutes after re-transfer, system completes generator cool down and shutdown.

1.2 Standard Configurations:*

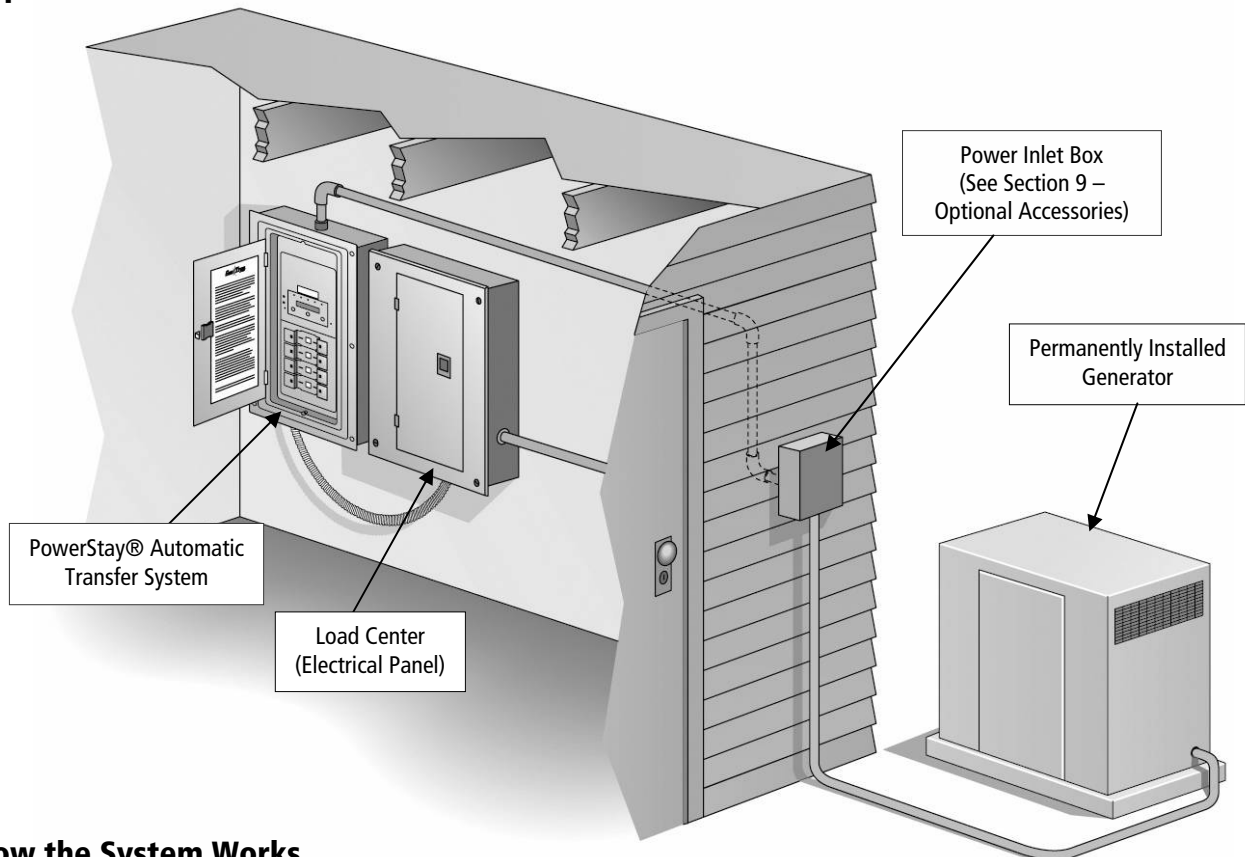
Table 1.2

Model	1000	1500	3000	3500
# Circuits Provided	8	8	16	16
Max Amps @ 240V	50 Amps	50 Amps	125 Amps	125 Amps
Max Generator Size in Watts	Up to 12,500	Up to 12,500	Up to 30,000	Up to 30,000
Included breakers	4 – 15 amp 1-pole 4 – 20 amp 1-pole	2 – 15 amp 1-pole 4 – 20 amp 1-pole 1 – 30 amp 2-pole	4 – 15 amp 1-pole 6 – 20 amp 1-pole 1 – 20 amp 2-pole 2 – 30 amp 2-pole	4 – 15 amp 1-pole 4 – 20 amp 1-pole 1 – 20 amp 2-pole 2 – 30 amp 2-pole 1 – 50 amp 2-pole
Power up these Essential Loads	Furnace Fan Refrigerator Freezer Microwave Well/Sump Pump Lighting Television/Radio	All items to left AND Garage Door Opener Water Heater Security System Computer	All items to left AND Dishwasher Clothes Dryer	All items to left AND Electric Range Air Conditioner**

*NOTE: Custom configurations are available from Gen/Tran. Contact your distributor or Gen/Tran for more information.

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1.3 Typical Installation



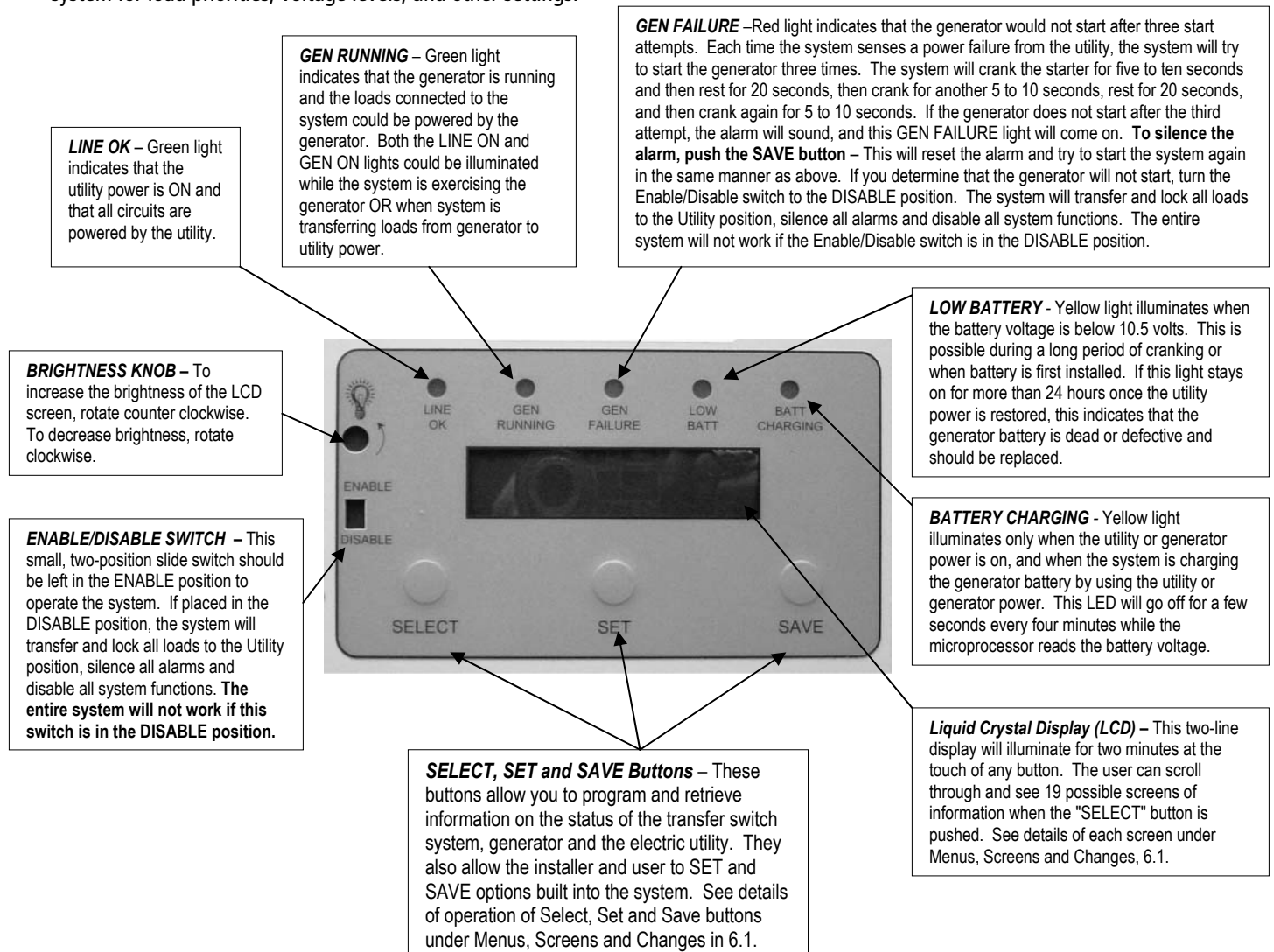
1.4 How the System Works

- 1) When the utility power fails, or drops below the low line voltage level (LLVL) (100 volts) or exceeds the high line voltage level (HLVL) (140 volts), the PowerStay™ system will begin the generator starting sequence after up to 30 second delay (programmable @ "AC Loss Delay" – screen 17).

- 2) Once the generator is started, the system is programmed to allow the generator to warm up (approx. 5 seconds) before it begins the sequenced transfer of loads to generator power. There may be a delay up to 2 minutes before the PowerStay™ system will transfer circuits to generator power. For best results, electronic equipment such as computers, clocks, security systems and phone systems should be connected to an Uninterruptible Power System (UPS) to ensure no data is lost until transfer of power occurs.
- 3) The system will automatically transfer loads according to priorities programmed in screen 18 (Breaker Priority) every 4 seconds starting with Priority 1 loads and continuing until the "Gen Power Shed Level" setting in Screen 14 is met.
- 4) During the utility power failure, the generator will continue to run until it either runs out of fuel (gasoline, propane or diesel-powered gensets) or until the utility power is restored. When higher-priority appliances/loads intermittently turn on, the PowerStay™ system will automatically turn off the lowest priority loads to allow this. During installation, you may want to assign a higher priority to such appliances/circuits that intermittently cycle motors on and off [ie: furnace, well pump, sump pump, refrigerator (fan and compressor), freezer (fan and compressor), and water heater]. It is suggested that you assign a lower priority to lights and entertainment equipment as well as kitchen and bath receptacles.
- 5) When the utility power is restored, the generator will continue to run the selected loads for approximately 60 seconds to be sure the utility power is stabilized. After 60 seconds, the PowerStay® system will then re-transfer the loads back to utility power.
- 6) The generator will continue to run without load for approximately five minutes for engine cool down, and then is automatically shut down.

1.5 Key Components

1.5.1 Control and Programming Panel – The Liquid Crystal Display (LCD) panel and surrounding buttons provide information about the system and connected equipment, such as the generator and battery. This user interface is also used for programming the system for load priorities, voltage levels, and other settings.



1.5.2 Circuit Breakers – All of the circuit breakers in the PowerStay system are two-pole, but are used also for two single pole 120 volt circuits. Each PowerStay™ circuit has a fully rated circuit breaker that should match the circuit breaker rating of the circuit breaker in the Main load center panel. (For example, if a lighting circuit in the load center is rated at 15 amps, and you want to operate that circuit during an outage, then the circuit breaker in the PowerStay® system should also be rated at 15 amps.) If any circuit breakers in the PowerStay® system are changed, they may **not** be exchanged for breakers rated higher than 30 amps on Models 1000 and 1500, and 50 amps on Models 3000 and 3500. If a 15- or 20-amp breaker is changed to 30 or 50 amps, the wiring between the PowerStay™ system and the load center must be changed to 30- or 50-amp-rated wires. 20 amp-rated wiring is supplied on all 15- and 20-amp circuits in the PowerStay® system. NOTE: The 50 amp circuit must be limited to connection to a circuit breaker in customer's load center marked as suitable for 75°C wire. NOTE ALSO that the A1 and B1 circuit breaker monitors the *entire* PowerStay system, and therefore the circuit breaker in the MAIN load center that A1 and B1 is connected to will start the transfer system if it is turned OFF. To avoid starting the generator and transfer system if the A1 and B1 breaker must be turned off temporarily for service, turn the Enable/Disable switch on the user interface to the DISABLE position. After turning this breaker ON in the customer load center, the Enable/Disable switch can be returned to the ENABLE position.

1.5.3 Mechanical Interlocks – Each pair of circuit breakers in the PowerStay® system has a mechanical interlock between the GENERATOR and UTILITY breakers. This is to prevent both breakers from being ON at the same time. By looking through the hole in either end of the interlock, the words ON or OFF can be observed on the circuit breaker. These breakers are turned ON or OFF automatically as the system operates. If a breaker trips and needs to be RESET, you must insert a finger under the end of the interlock to turn the breaker on.

WARNING NEVER remove the mechanical interlocks unless a circuit breaker needs replacement by a qualified professional.

1.5.4 Wiring Harness – Each of the circuits on the PowerStay® system are labeled A1, B1, A2, B2, A3, B3...and so on. The blue and red wires provided in the harness are marked to correspond to the circuits, and **MUST** be wired in this manner. When selecting which circuits to wire to the PowerStay® system, keep in mind that your larger loads should be wired to A1, B1, A2, B2, and so on. Wire sizes vary from #8 AWG for 50 Amp to #12 for 15- or 20-amp circuits. The WHITE neutral wire and GREEN ground wire in the harness should be terminated in the appropriate marked terminal blocks on the bottom center of the panel.

1.5.5 Low Voltage Cable – 50 feet of 4-conductor, UL Listed cable is provided to connect the generator control circuits to the PowerStay® system.

1.6 Standards Compliance

PowerStay® Automatic Power Transfer Systems have been tested and Listed to Underwriters Laboratories (UL) standard 1008 in file E230938. UL performs periodic factory inspections to ensure compliance with the engineering documentation. The PowerStay® Systems are housed in NEMA 1-rated enclosures for indoor use only.

Each PowerStay® system is compliant with Article 702 of the National Electrical Code as an “automatic transfer switch for use in Optional Standby Systems” and should not be used as an emergency system (see NEC Articles 517 and 700) or as a legally required system (see NEC Article 701).



SECTION 2 – COMPATIBLE EQUIPMENT

2.1 Generators

In order for the PowerStay system to function as designed, it **must** be connected to a permanently installed generator system. Generators that run on forced fuels such as propane and natural gas are compatible with the PowerStay system.

Gasoline-powered engines **must** be equipped with automatic choke **and** electric/remote start for the PowerStay system to function as designed. *Contact Gen/Tran for the most up-to-date list, or visit www.gen-tran.com under Products/Automatic Transfer Switch Systems.*

PARTIAL LIST OF COMPATIBLE GENERATORS:

- Honda Generators: EM 3500, EM5000, EM6000GP, EX4500, EX5500, EB12D
- Makita Generators: G12000R
- Arctic Cat Generators: AC4000GD2E, AC7500GD2E
- Cummins/Onan Generators: RS12000, RS15000, RS20000, 20GGDB (commercial – single phase only)

2.2 Circuit Breakers and Fuses

This system has been configured, factory tested and shipped with all necessary circuit breakers (non-interchangeable type). If a circuit breaker in the system needs to be replaced, you will need to order the appropriate breaker from Gen/Tran or your distributor.

A small replaceable fuse next to the green terminal block on the main PC board left side is used for possible short circuits in the low voltage connections to the generator.

2.3 Low Voltage Cable

Each PowerStay® Automatic Transfer system is shipped with 50 feet of 4-conductor, 18 gauge, UL Listed cable. If the length required exceeds 50 feet, splice additional length to the cable provided. Be sure that added cable meets or exceeds the ratings printed on the jacket of the provided cable.

SECTION 3 – PREPARING FOR INSTALLATION

3.1 Tools Required

- ◆ Electric Drill
- ◆ Wire Cutter/Stripper for 18 to 8 gauge AWG wire
- ◆ Screwdrivers – Straight Blade and Phillips
- ◆ Hammer
- ◆ Digital Voltmeter (DVM)
- ◆ Wire Connectors* - If additional required
- ◆ 4 Anchors and Screws
- ◆ PVC Cement
- ◆ Stud Finder – For flush mounting in existing construction
- ◆ Hole Saw – For flush mount installations

**Use UL Listed 3M, Ideal, or Gardner Bender (GB) wire connectors only.*

3.2 Mounting Location:

The PowerStay Automatic Transfer System must be installed next to the load center in the house or building. Choose an indoor location that offers a flat, rigid mounting surface capable of supporting the weight of the transfer switch. Avoid locations that are moist, hot or dusty. Since your PowerStay system may be flush mounted, check to make sure there are no pipes, wires or other obstructions or interferences in the immediate area.

Transfer switch can be installed on either the left or right side of your house electrical panel (also called load center). The PowerStay® system is designed for surface or flush mounting depending on the location of the existing load center. Each PowerStay® system comes with 24" of flexible conduit that must come out from the lower portion of the PowerStay® system as shipped. The conduit fitting and wires can connect to the side or bottom of the customer load center – wherever more convenient. If flush-mounting is desired, the PowerStay® system can be mounted in the adjacent stud space next to the existing load center. A hole must be drilled through the stud to accommodate the 1-1/4" or 1 1/2" conduit and fitting. The flexible conduit may be cut shorter if convenient.

3.3 Planning, Selecting and Prioritizing Your Circuits

Each PowerStay® system has an "A" phase and a "B" phase. Thus, each PowerStay® circuit has been assigned a number that corresponds with "A1" and "B1".

- 1) Make a list of the appliances you want to use during a power outage. Examples include: Refrigerator, furnace, microwave, lights, well pump, television, garage door opener, computer, phone, etc. Then go to your load center to determine which circuit these appliances are assigned to. You may need to turn off and on various circuit breakers in your load center to determine the circuits. NOTE: Circuits/appliances can be selected from two different adjacent load centers. See 4.2 Mounting Procedure for Two Load Centers.
- 2) Assign a priority to all circuits/appliances by ranking them from most important to least important, with 1 being most important, and so on. Keep in mind that less important circuits may be occasionally "shed" or turned off to allow higher priority circuits to stay on.
- 3) Then, assign which circuit/appliance will correspond with the appropriate circuit on the system. PowerStay® circuits A1 and B1 are the highest amperage, but not necessarily the highest priority. Complete Table 3.3 with this information.
- 4) Installer will assign priority during Programming. Screen 18 "Breaker Priority" allows the installer to prioritize the loads for desired load shedding. NOTE: You may want two different circuit priority tables – one for Summer and one for Winter. Your installer will have to change these priorities based on the season.

Let's assume that the well pump is your most important load. Since this well pump requires a two-pole 20-amp circuit on Model 3500, you would select A4 and B4, which is a 20 amp circuit. A1 and B1 may be a 50 amp (range) circuit, but not your highest priority during a power outage. Screen 18 allows you to switch priority 1 and 4 to make the well pump priority 1 and the range priority 4. This priority switching can be done with all of the circuits, but only two at a time. If the generator is operating near its capacity without the well pump running and the well pump needs to come on to refill the pump reservoir, the PowerStay™ system will automatically shed (turn off) the least important circuits. After the well pump motor shuts off, the PowerStay™ system will

automatically turn on the circuits/loads that were turned off. NOTE: The system will shed the least important loads in pairs; if a high-priority load on "A" phase needs to come on, it will turn off the least important loads on both "A" and "B" phases.

Circuit Priority

Table 3.3

Circuit	Model 1000	Model 1500	Model 3000	Model 3500	Priority	Appliance(s)
A1	20 amps	30 amps	30 amps	50 amps		
B1	20	30	30	50		
A2	20	20	30	30		
B2	20	20	30	30		
A3	15	20	20	30		
B3	15	20	20	30		
A4	15	15	20	20		
B4	15	15	20	20		
A5	NA	NA	20	20		
B5	NA	NA	20	20		
A6	NA	NA	20	20		
B6	NA	NA	20	20		
A7	NA	NA	15	15		
B7	NA	NA	15	15		
A8	NA	NA	15	15		
B8	NA	NA	15	15		

3.4 Reconfiguring System Circuit Breakers

Gen/Tran offers four standard PowerStay™ system models with circuit breakers installed and tested at the factory, per Table 1.2. Certain installations may require circuit breaker reconfiguration based upon the loads to be supported with backup power. If the included circuit breakers need reconfiguration, the circuit breaker board must be removed and returned to Gen/Tran. Circuit breaker boards reconfigured in the field VOID the system warranty. Contact Gen/Tran for instructions. Circuit breaker board reconfigurations will typically take two weeks.

SECTION 4 – INSTALLATION AND WIRING

CAUTION Extreme care should be taken to protect the transfer switch from drill chips, fillings, and other contaminants when making the cable entry holes and mounting the enclosure to prevent component damage or a future malfunction.

WARNING

This installation must comply with all applicable codes, standards and regulations.

4.1 Standard Mounting Procedures

A. Surface Mounting in New Construction:

1. Mount and wire main load center as normal.
2. Remove cover from PowerStay system. Then remove the interior assembly by removing the two screws located near the bottom of the interior assembly. You may need to remove one or two additional screws on the sides depending on the model. Once you've removed the screws, slide the assembly toward the top of the enclosure, and lift out. There are two keyholes in the back of the assembly for easy re-mounting. Note: Only the two screws removed near the bottom need to be used when reinstalling the interior assembly. SEE PHOTO A.
3. Mount the PowerStay system in a convenient location next to the main load center. Ideally, we recommend that the flexible conduit be installed from the lower knockouts in the PowerStay system to the lower knockouts in the load center. Be careful not to over bend the flexible conduit as it may break. SEE PHOTO B.
4. After lining up the enclosures for easy conduit entry secure the fittings on the conduit with cement and install the conduit.
5. Install the provided wire harness into the flexible conduit. Install the generator power lead cables in upper portion of PowerStay enclosure. Then install low voltage cable in upper portion as well. See Section 4.5 for generator connection. Be sure to pull enough cable to reach the bottom of the cabinet.
6. Install the generator power lead cables in upper portion of PowerStay enclosure. SEE PHOTO C. Then, install low voltage cable in upper portion as well. See Section 4.5 for generator connection. Be sure to pull in enough cable to reach the bottom of the PowerStay enclosure.
7. Remount the PowerStay interior once all drywall and painting are complete.
8. Proceed to Section 4.3.

B. Flush-Mounting in New Construction:

1. Follow steps 1-2 as above.
2. Mount PowerStay cabinet in adjacent studs; allow enough room if you plan to loop the flexible conduit or run it directly from the two lower side knockouts in each cabinet.
3. Secure the conduit fittings with cement, and install conduit.
4. Follow steps 5-8 as above.

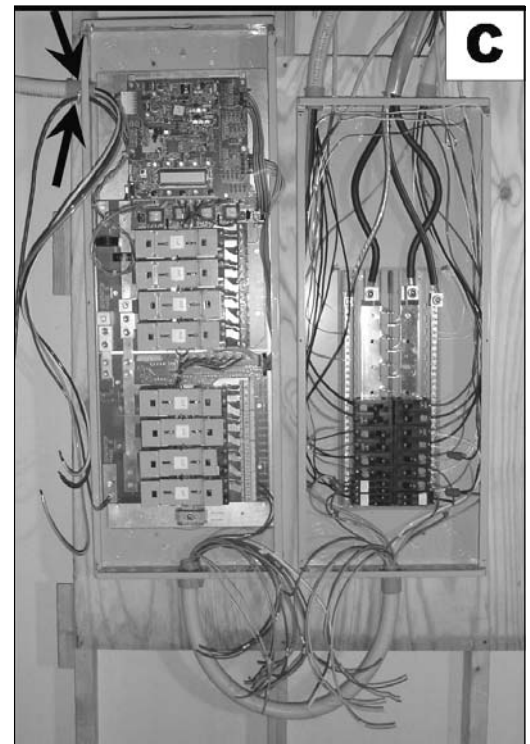
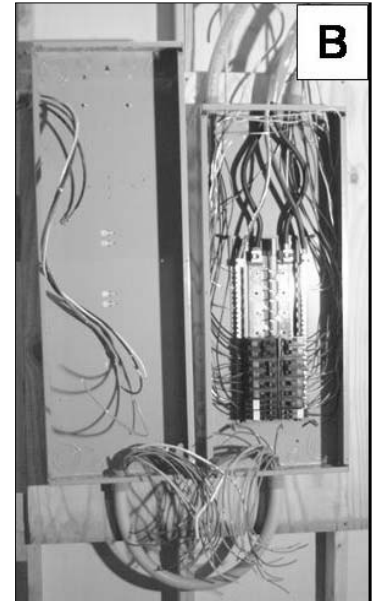
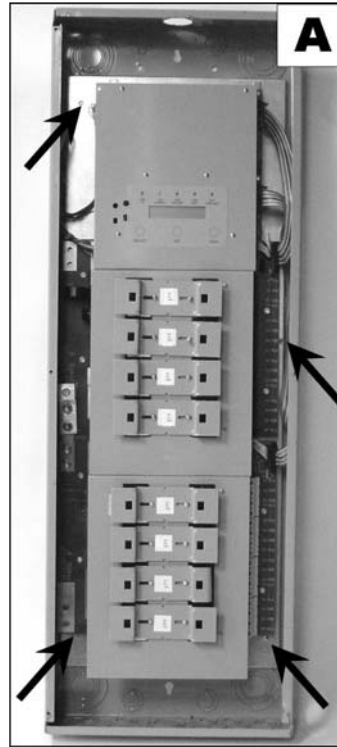
C. Surface-Mounting in Retrofit:

1. Remove cover from load center after turning OFF main breaker.

WARNING

All wires are still hot on utility/line side of the main.

2. Determine the best way to enter the load center – either from the bottom or lower side of the enclosure.

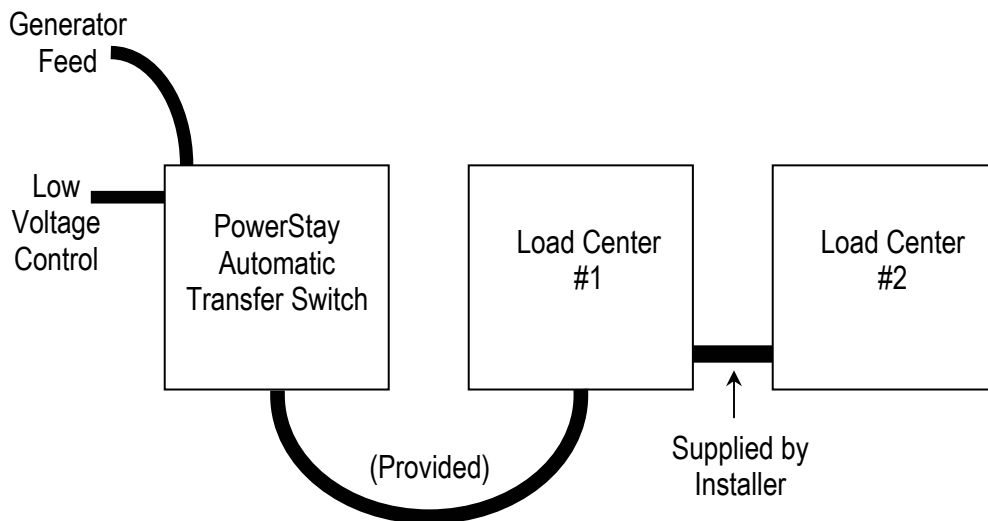


3. Follow step 2 in 4.1A above to prepare the PowerStay system.
4. Mount the PowerStay enclosure in a convenient location next to the main load center. Allow enough room if you plan to loop the flexible conduit or run it directly from the two lower side knockouts in each cabinet.
5. Feed the wires from the wiring harness through the conduit, and let them hang from each cabinet.
6. Install the generator power lead cables in upper portion of PowerStay enclosure. SEE PHOTO C. Then, install low voltage cable in upper portion as well. See Section 4.5 for generator connection. Be sure to pull in enough cable to reach the bottom of the PowerStay enclosure.
7. Re-install the PowerStay interior assembly and secure in place with two screws in lower corners.
8. Proceed to Section 4.3.

D. Flush-Mounting in Retrofit:

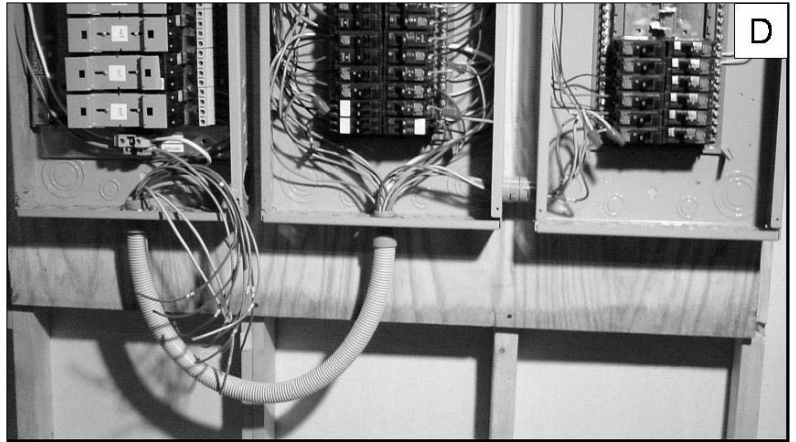
1. Remove cover from main load center. Check to make sure there are no cables or wires exiting the load center on the side you want to mount the PowerStay system. Note: Generator power leads must enter the PowerStay enclosure near the top. Make sure there is enough room to enter the adjacent stud area near the top of the enclosure.
2. Use a stud finder to determine if there is ample room (14.5") between the studs where you want to mount the PowerStay enclosure. If not, you will have to modify the wall interior to accommodate the PowerStay enclosure before proceeding.
3. Locate the large knockouts in the lower sides of the load center and the PowerStay enclosure. It is ideal for these to line up.
4. Follow Step 2 in 4.1A above to prepare PowerStay.
5. Hold PowerStay enclosure on the wall with knockouts lined up as described in 4.1D Step 3. Use a pencil to trace a line around the enclosure.
6. Cut out drywall on the pencil line.
7. Route appropriate wiring from generator so as to enter PowerStay enclosure near the top.
8. Drill a 1/4" hole through the selected knockout in the lower side of the load center and the stud behind it. Using a hole saw slightly larger than the outside dimension of the conduit fitting provided, drill out the stud using the 1/4" pilot hole just cut.
9. Install the conduit fittings. If the conduit fittings cannot be easily installed at this point, it may be easier to install a 3" long, steel nipple between the cabinets (not included).
10. Install the generator power lead cables in upper portion of PowerStay enclosure. SEE PHOTO C. Then install low voltage cable in upper portion as well. See Section 4.5 for generator connection. Be sure to pull enough cable to reach the bottom of the PowerStay enclosure.
11. Mount the PowerStay enclosure in between the studs and flush with finished wall.
12. Mount interior assembly back into PowerStay enclosure, and proceed to Section 4.3.

4.2 Mounting Procedure for Two Load Centers



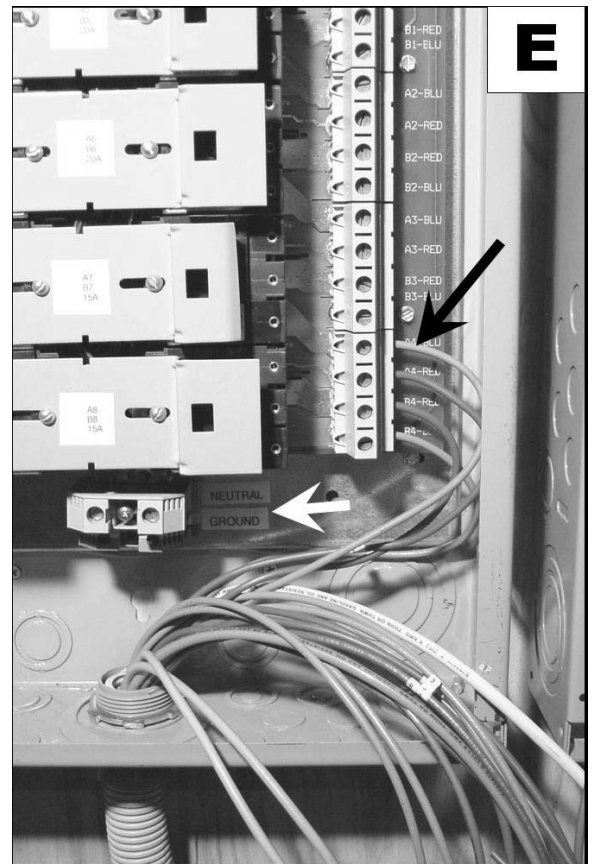
1. Remove the covers from load centers.
2. **CAUTION** All wires are live inside load centers. Turn off main circuit breakers to ensure safety during installation. Remember, all wires on "Line" side of Mains are still hot.
3. Decide on whether it is easier to loop the flexible conduits into the bottoms of the enclosures or connect with nipples on the lower sides.

4. Remove cover and entire interior assembly of Power Stay system. Interior assembly is shipped with 3 or 4 screws in main chassis – two on the bottom sides and one or two on the sides of the assembly, depending on model. Push the interior assembly towards the top of the enclosure to “unhook” it from the keyhole hangers in the main chassis.
5. Line up enclosures so the knockouts line up. Be careful not to overbend the flexible conduit. SEE PHOTO D.
6. Mount PowerStay enclosure using keyhole slots provided or slots on side of enclosure if flush mounting.
7. Select the desired knockouts, secure fittings on conduit with cement, and attach to PowerStay and first load center. A smaller diameter conduit or nipple may be used to connect the two load centers together.
8. Make generator connections of conduit or cable to the upper end of PowerStay enclosure. Be sure to extend cable to bottom of enclosure when pulling in wire.
9. Feed harness wires from PowerStay enclosure to first load center. Extend wires through to second load center for circuits located there. If harness wires are not long enough to reach desired circuit breakers, install a short extension using the same gauge wire and a wire nut to make the connection.
10. Connect the White Neutral wire and Green Ground wire to the first load center neutral and ground bars. Both neutrals and grounds are tied together in the main service panel.
11. Re-install PowerStay interior assembly using keyhole slots in main chassis and two 8/32 bolts in lower corners of main chassis.
12. Remove the six screws from the face of the top control panel, and lift off panel.
13. Remove the four screws securing the bezel frame(s) around the circuit breaker group(s). **NOTE:** Do NOT remove circuit breaker interlocks for installation. You may remove the bezel frame without removing the interlocks.

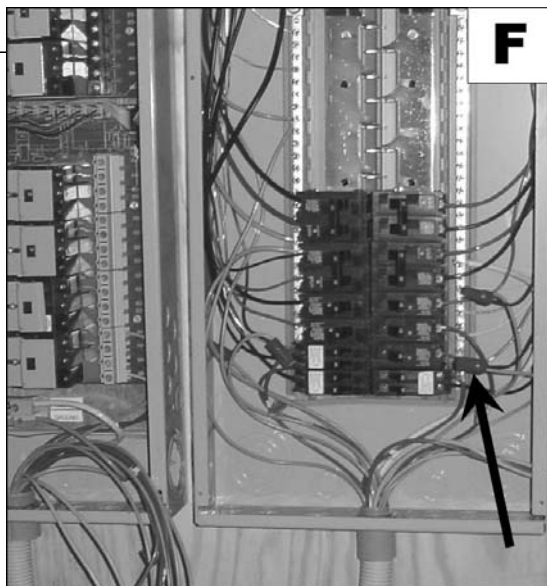


4.3 Wiring Procedure

- 1) Once you have the wires in the flexible conduit, you are ready for wiring the system. **NOTE:** The blue Electrical Non-Metallic Tubing (ENT) is UL Listed and recognized by the National Electrical Code (NEC). However, it generally cannot be used in buildings that exceed three (3) floors above grade. While the NEC does allow its use for this application, local codes and inspectors may prohibit its use. If this situation exists in your locale, contact Gen/Tran at 1-888-GEN-TRAN to request a length of 1-1/2" Flexible Metal Conduit (FMC) to use in its place.
- 2) All blue and red wires are marked with A1, B1...A4, B4 or A8, B8. Strip each wire, and insert in the corresponding PowerStay terminal on the lower right side. Tighten the screw on the terminal block. Insert the white Neutral wire into the terminal block at bottom of the PowerStay system marked “Neutral” and tighten. Repeat for Green “Ground” wire. SEE PHOTO E.
- 3) You are now ready to wire the load center. Start wiring procedure with circuit A1. Remove the wire from the selected circuit breaker in the Main load center. Factory labeling has the largest amperage loads as A1 and B1, then A2 and B2., etc. Each circuit breaker in the PowerStay system is rated from 50 to 15-amp., depending on the model. If there is a 50 amp breaker in your model, it should be wired to A1 and B1. 30-amp circuits use a #10 AWG wire while 15- and 20-amp circuits are supplied with #12 AWG wire. SEE PHOTO F.
- 4) Find the Red wire from the PowerStay® system with the corresponding number (i.e.: A1). Make sure it matches the ampere rating of both the circuit breaker in the PowerStay system and the load center circuit breaker. Cut Red wire A1 to a convenient length, strip approximately 5/8", insert it into the circuit breaker in the load center from which the wire was removed in Step 3, and tighten the screw.



- 5) Find the Blue A1 wire with the same corresponding number, cut to a convenient length to match up with the wire removed from circuit breaker. Strip 5/8" off, insert both wires into a wire connector and twist tightly. (NOTE: Only UL listed type wire connectors must be be used for splicing the blue load wires from the PowerStay system to the load wires in the load center. The installer is responsible for selecting the proper connector for the various wire combinations.) This same procedure is repeated for all 8 or 16 circuits, depending on your PowerStay model. (NOTE: NEC Article 312.8 allows splicing in a load center as long as the fill does not exceed 75% including splices.)
- 6) Insert the White Neutral wire into an unused hole in the neutral bar in the load center and tighten.
- 7) Insert the Green Ground wire into an unused hole in the ground bar in the load center OR in an unused hole in the neutral bar if no ground bar exists, and tighten. NOTE: Only one load center Ground and Neutral wire is required for Two Load Center installations. See Section 4.4 Wiring Diagram.
- 8) Affix "WARNING" label (included in Installation Kit) next to circuit breaker in the Main load center connected to A1/B1. See example below.



WARNING: Turning off or tripping this breaker will cause generator and transfer switch to start.

4.4 Wiring Diagram – Model 1000

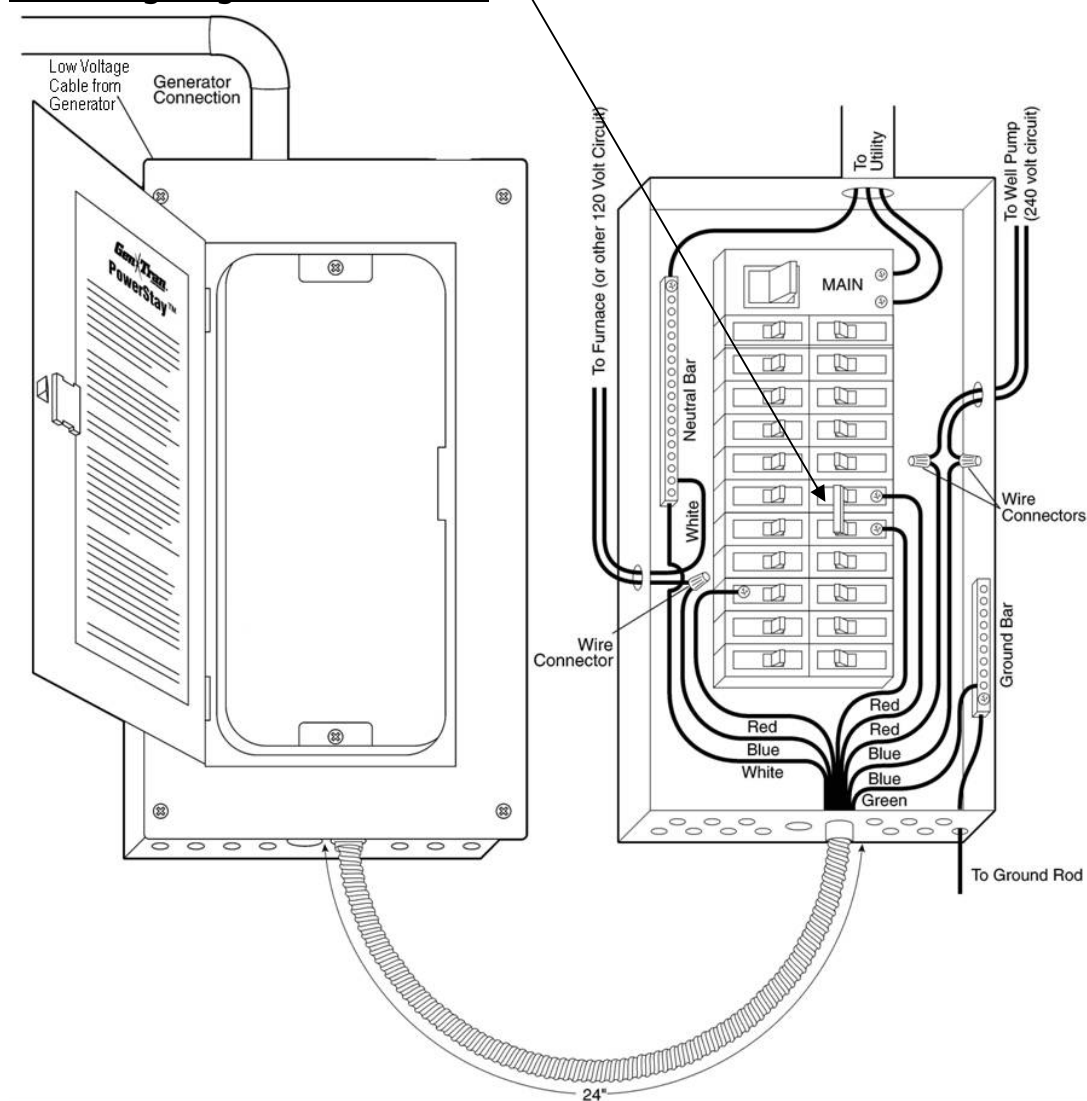


Figure 4.4

4.5 Connecting the Generator to the PowerStay® System

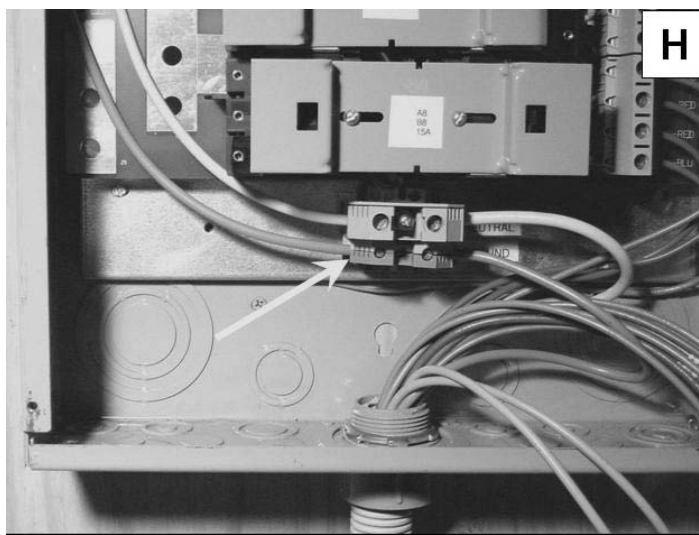
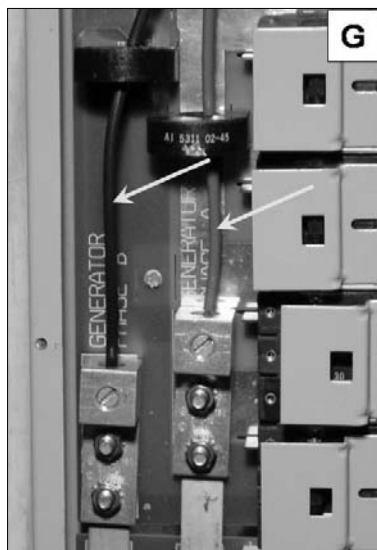
NOTE: Place the Enable/Disable switch in the DISABLE position before proceeding with this step.

The PowerStay® system has been designed to allow the generator power lead cables to enter the enclosure through the upper portion of the panel. The cables should be run down the LEFT side of the panel. SEE PHOTO G. Make sure the hot generator power cables pass through the current transformers (donuts) mounted on the circuit breaker board *before* securing them to the large lugs marked GENERATOR PHASE A and GENERATOR PHASE B. The neutral and ground cables should be routed on the left side and terminated in the terminal blocks mounted on the bottom center of the panel marked "Neutral" and "Ground." SEE PHOTO H. Be sure to select the proper Copper wire gauge for the generator power leads based on the following table. NOTE: The PowerStay® systems have been UL Listed for use with Copper wire ONLY.

Table 4.5

Gen Size In KW	8 KW	12 KW	15 KW	20 KW	25 KW	30 KW
Copper AWG	8	8	6	4	3	2

For more information on wire size and ampacity ratings, see NEC Article 310, Table 310.16.



4.6 Connecting the Low Voltage Cable to the PowerStay® System

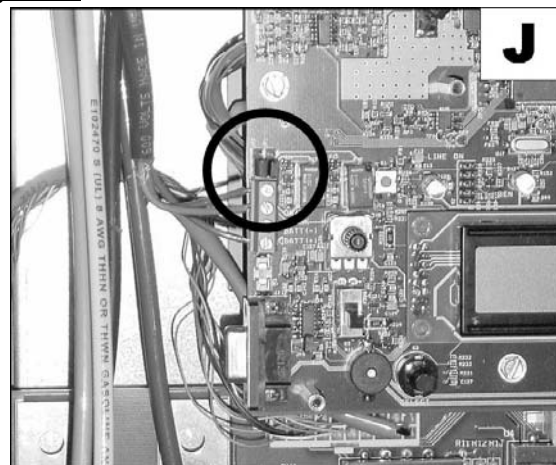
NOTE: Place the Enable/Disable switch in the DISABLE position before proceeding with Step 4.6.

Each PowerStay® system includes a 50-foot, 4-conductor, UL listed low-voltage cable (rated at 600 volts) that when installed provides signaling between the generator and the PowerStay® system. This cable *must* be run separately from the power lead cables coming from the generator. The low voltage cable will be terminated in a green terminal block on the left side of the large PC board in the PowerStay® system. Since no two generators are alike, the termination of the low voltage cable to the generator will be different from manufacturer to manufacturer. Gen/Tran provides instructions that specify which terminals to use on the PowerStay terminal block and on the generator based on whether your generator has a "Pull-Up" or "Pull-Down" system.

To determine whether your generator has a Pull-Up or Pull-Down system for starting, you will need to use a Digital Volt Meter (DVM) to measure the voltage from the Start terminal on the generator to the Ground terminal (the starting battery must be connected in the generator) while the generator is cranking.

- If 12 Volts DC is measured, the generator has a Pull-Up Start system.
- If 0 (zero) Volts DC is measured, the generator has a Pull-Down Start system.

NOTE: Each PowerStay Automatic system ships from the factory set for a "Pull-Up" generator, and can be reset for a "Pull-Down" generator. SEE PHOTO J FOR FACTORY SETTING.



Resetting for a Pull-Down Start generator:

If the generator is a "Pull-Down" type, locate the small 4-terminal block on the left edge of the main PC board. Above the terminal block there are two male 3-pin terminal blocks with a jumper on two of the pins marked JP3 and JP1 (Middle and Lower) pins. Move the jumper on each of these blocks to the top and middle pins for Pull Down Start generators. SEE PHOTO K.

To continue connecting the low voltage cable, the small, green terminal block on the left edge of the main PC board is marked with four labels to indicate how to connect the low voltage cable. All four wires in the low voltage cable should be stripped about 3/8" and inserted in the terminal block and tightened as below. (NOTE: Not all generators need four wires to start and run. Some may combine the Start and Run function in which case the "Crank" wire is omitted. From top to bottom, the colors are: Blue, Orange, Black, Red. SEE PHOTO L.

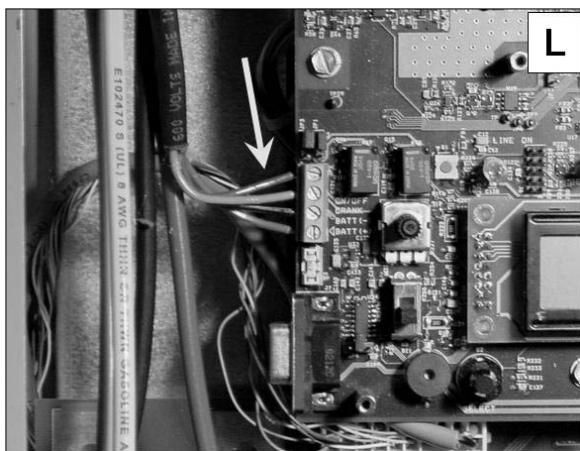
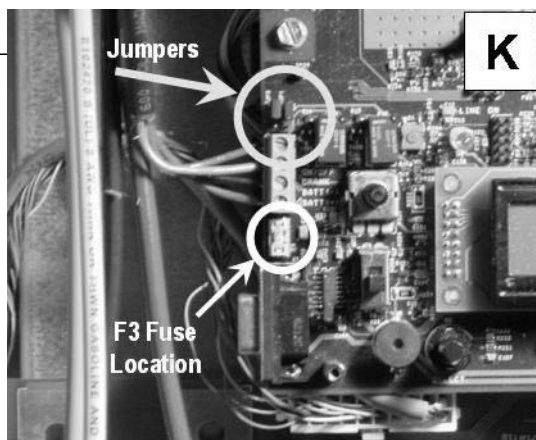


Table 4.6

BLUE	On/Off
ORANGE	Crank/Start
BLACK	Battery Negative (-)
RED	Battery Positive (+)

4.7 Connecting the Low Voltage Cable to the Generator

The 4-wire low voltage cable delivers important signaling information between the generator and the PowerStay system for startup, running, shutdown and battery charging of the generator. Some generators utilize all four wires for signaling while others use only three or two wires. Refer to the generator manufacturer's installation instructions for proper connection of low voltage wiring. If you need assistance with your particular generator connection, fax a wiring diagram to Gen/Tran at 1-770-552-7756.

NOTE: If the low voltage cable provided is not long enough, installer may extend the wiring using an 18/4 comparable cable. The cable provided **MUST** be connected to the PowerStay system and used for the first 50 feet to the generator.

Generally, there is a terminal block in the wiring compartment of the generator to connect the power cables and the low voltage wire to control the generator.

1. Connect the RED wire from the PowerStay system to the battery "+" (positive) terminal.
2. Connect the BLACK wire from the PowerStay system to the battery "-" (negative) terminal. If there is no battery terminal block, run the BLACK wire to the "-" (negative) post on the battery itself.
3. Connect the ORANGE wire from the PowerStay system to the Crank or Start circuit (only used on generators having a separate Start terminal.) The ORANGE wire is not used if there is no specific Start terminal on the generator.
4. Connect the BLUE wire from the PowerStay system to the ON/OFF terminal on the generator. This wire keeps the generator running after starting. If your generator has a 2 or 3-wire system, the BLUE wire should be installed with the Red wire as the other + (positive) wire on the battery.

IMPORTANT: The built-in Battery Charger will NOT charge the generator battery if the BLACK wire on the low voltage cable is not connected.

SECTION 5 –STARTUP AND TESTING

WARNING

AC power within the cabinet and the rear side of cabinet door presents a shock hazard that can cause severe personal injury or death. Use extreme caution to avoid touching electrical contacts when the cabinet door is open. Do not wear jewelry or loose clothing. Stand on a dry, non-conductive surface such as a rubber mat or wooden platform.

WARNING

Improper operation of the generator presents multiple hazards that can cause severe personal injury or death. Observe all of the safety precautions in your generator manuals.

5.1 Preliminary Checks

1. Inspect the PowerStay System for the following:
 - ◆ No loose or unconnected wires. Verify torques.
 - ◆ No tools or parts left inside cabinet.
 - ◆ No debris inside cabinet. Use vacuum to clean out if desired.
2. Verify that the PowerStay system, generator and electrical power system of the house or building are compatible by reviewing all equipment rating labels and wiring diagrams. Verify correct generator operation and voltage outputs.

5.2 Energizing the Switch

The PowerStay system is continuously energized with utility power; you are ready to energize the equipment with generator power.

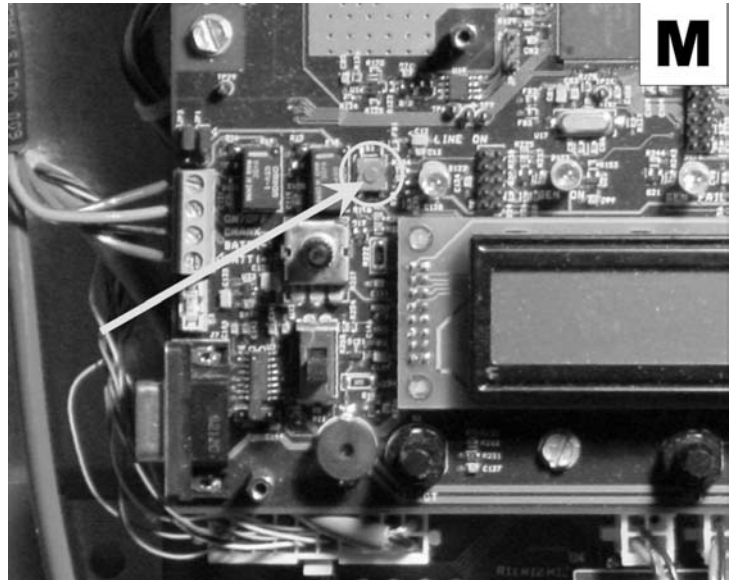
WARNING

Voltages within the enclosure are capable of causing severe personal injury or death. Use extreme caution to avoid contact with energized equipment.

CAUTION

Severe equipment and property damage can occur if system is not energized at proper voltage. Do not energize equipment if generator voltage does not match equipment rating labels.

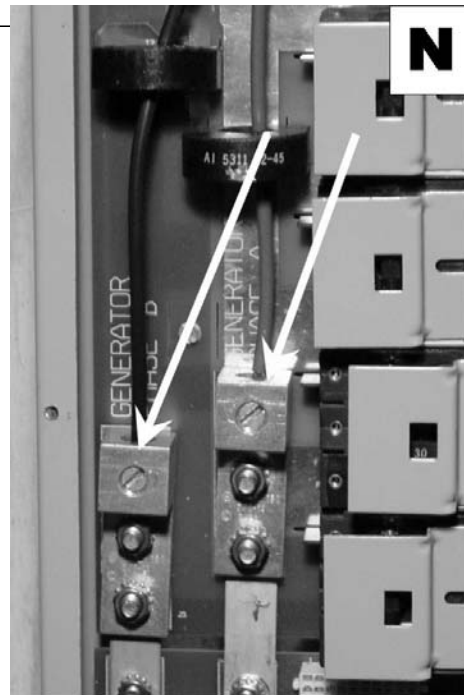
1. To energize the switch, turn ON the main circuit breaker and all other breakers in the load center, and turn all circuit breakers on the PowerStay® system to the UTILITY - ON position.
2. Use a voltmeter to measure line-to-line and line-to-neutral voltages across the normal line terminals to ensure normal voltage is correct.
3. Before initial testing or programming, the following initialization procedure must be carried out:
 - a. Slide the Enable/Disable switch to the ENABLE position.
 - b. Locate the Reset button in PHOTO **M**. Using the sharp end of a pencil, press this Reset button until the display goes blank, then release the Reset button.
 - c. The display should show "Gen/Tran PowerStay Version X.XX." If not, repeat Step B above.
 - d. Slide the Enable/Disable switch to DISABLE.
 - e. The Automatic Transfer Switch is now initialized and ready for testing and programming.



5.3 Testing The Switch

1. Position the engine control selector switch on the standby generator to the AUTOSTART position (it may also be labeled Remote Start). Turn ON the Generator Main breaker.
2. Slide the "Enable/Disable" switch to the Enable position. Turn OFF the circuit breaker marked A1/B1 in the Main load center. This will simulate a utility power interruption.
3. After a brief time delay (default is 10 seconds), the PowerStay system will attempt to start the generator. Use a digital volt meter to verify generator voltage at generator terminal blocks. SEE PHOTO **N** on the next page.
4. After generator starts, the PowerStay system will transfer loads to generator power. Verify the following:
 - a. Line voltages on Phase A and B are zero (0) – Screens 2-3
 - b. Relay Status (1-8 loads) – Screen 4

- c. Generator voltage on Phase A and B – Screens 5-6
 - d. Generator Current on Phase A and B – Screens 7-8
 - e. Generator Power – Screen 9
 - f. Battery Voltage – Screen 10
5. Turn ON circuit breaker in Main load center that was turned OFF in Step 4 above.
6. After a one-minute delay, the PowerStay system will transfer loads back to utility power, cool down and shut down generator.
7. Ensure Screen 19 is set to YES. Go to Screen 12 and press SAVE to test system. Repeat Step 4. System will shut down generator after 7-10 minutes of runtime.
8. See Section 7 – Troubleshooting if any of the above tests fail.
9. Testing is now complete. You may now program the system for your specific generator and requirements.
10. Finally, replace circuit breaker bezels, Control and Programming Panel cover and door cover to the PowerStay system. Replace the cover to the load center. Fill in the chart on the door of the PowerStay® system to describe your emergency circuits and corresponding circuit numbers in the load center.



SECTION 6 – PROGRAMMING THE SYSTEM

6.1 Menus, Screens and Changes

The following is a list of information displayed on each of the programming screens. Screens 13-19 are intended for use by the installer ONLY - based upon the generator ratings and homeowner preferences.

SCREEN	"SELECT"	DESCRIPTION OF FUNCTION	"SET"	"SAVE"	FILL IN YOUR SETTING
1	Gen/Tran PowerStay Version X.XX	First Menu in sequence	Display Only	Display Only	
2	LINE VOLTAGE PHASE A (XXX Volts)	Displays volts of phase A Utility. Displayed value is fixed until screen is selected again.	Display Only	Display Only	
3	LINE VOLTAGE PHASE B (XXX Volts)	Displays volts of phase B Utility. Displayed value is fixed until screen is selected again.	Display Only	Display Only	
4	RELAY STATUS (X Loads)	Displays the number of circuits (i.e., appliances) currently being powered by the generator through the PowerStay™ system. Circuits are always turned on in pairs (A+B). Maximum number of circuits engaged is 4 (models 1000 and 1500) or 8 (models 3000 and 3500).	Display Only	Display Only	
5	GEN VOLTAGE PHASE A (XXX Volts)	Displays volts on Phase A Generator. Displayed value is fixed until screen is selected again.	Display Only	Display Only	
6	GEN VOLTAGE PHASE B (XXX Volts)	Displays volts on Phase B Generator. Displayed value is fixed until screen is selected again.	Display Only	Display Only	
7	GEN CURRENT PHASE A (XX Amps)	Displays Amps (current) being drawn from the generator on phase A. Displayed value is fixed until screen is selected again. <i>NOTE: Display may show 3-7 amps even if no current is drawn.</i>	Display Only	Display Only	
8	GEN CURRENT PHASE B (XX Amps)	Displays Amps (current) being drawn from the generator on phase B. Displayed value is fixed until screen is selected again.	Display Only	Display Only	
9	GENERATOR POWER (XX.XX KVA)	Displays total kilowatts (KVA) being output by the generator. Equals volts multiplied by amps on A and B phases. Displayed value is fixed until screen is selected again.	Display Only	Display Only	
10	BATTERY VOLTAGE (XX.X Volts)	Displays current voltage of the generator battery. If the battery is OK, this should read between 10.5 and 14.5 volts. Displayed value is fixed until screen is selected again.	Display Only	Display Only	
11	GENERATOR RUN TIME (X Hours, X Minutes)	Displays the total run time of the generator in hours since the last reset. This is to gauge fuel consumption for gasoline or diesel-powered generators, and warn attendant to refuel. This item should be reset each time the generator is refueled. Press SAVE to reset the timer. This does NOT display the total hours of run time for the generator from first use. <i>Disregard if your generator is fueled by natural gas or propane.</i>	No Function	Press SAVE to set the timer and silence the low fuel alarm.	
12	PUSH <SAVE> TO TEST GENERATOR NOW	Allows user to test generator at will. This test will NOT affect the exercise test interval.	No Function	Press SAVE to start a generator test. Loads are transferred only if programmed to do so by installer in Screen 19.	
13	FUEL ALARM TIME (XX Hours)	Displays and sets alarm time from 0 to 12 hours based on fuel tank capacity of gasoline or diesel-powered generators. Factory setting is 6 hours. Leave at "0" if natural gas or propane.	Press SET to select alarm time from 0 to 12 hours.	Press SAVE to store the alarm time.	

14	GEN SHED LEVEL (XX KVA)	Displays and sets the generator's continuous kilowatt (KW) rating. Round down to next full KW if required. (Example: If generator continuous rating is 7.5 KW, set shed level to 7.0 KW) Factory setting is 10 KW. CAUTION If shed level is improperly set, severe equipment damage can result.	Press SET to select the KW rating in 1KW increments from 5 to 12KW for models 1000 and 1500, and from 5 to 30 KW for models 3000 and 3500.	Press SAVE to store the generator KW shed level.	
15	GEN FUEL TYPE	Select the type of fuel used by generator: Gasoline, Diesel, LP or Natural Gas. Factory setting is Gasoline.	Push until desired fuel type is displayed	Press to SAVE selected fuel type.	
16	GEN TEST PERIOD (XX Days)	Displays days until next generator exercise test, from 1 to 28 days. Factory setting is 14 days.	Press SET to change number of days to next test.	Press SAVE to save the test setting.	
17	AC LOSS DELAY (XX Seconds)	Displays and sets delay time from utility power loss to generator start. Choose from 5 to 30 seconds. Factory setting is 10 seconds.	Press SET to select the delay time from 5 to 30 seconds.	Press SAVE to save delay setting.	
18	BREAKER PRIORITY 1 2 3 4 OR 1 2 3 4 5 6 7 8	Displays either "1 2 3 4" or "1 2 3 4 5 6 7 8" depending upon your PowerStay™ model. Assigns priority to circuits. Only two circuit breakers can be switched simultaneously. Complete Table 3.3 prior to changing priorities. Factory setting is "1 2 3 4" OR "1 2 3 4 5 6 7 8" NOTE: Press SET to start changing circuit priority. Press SELECT to select the circuit to be changed. Continue to press SELECT until desired circuit priority is selected. Press SET to choose the circuit breaker number for selected priority. Continue to press SET until the display shows the breaker number and current circuit priority. Press SAVE to store the desired setting. To make another change, press SET and repeat steps above. When prioritization is complete, press SELECT to move to next screen.	Press SET to select circuit number.	Press SAVE to save priority.	
19	LOAD XFER DURING GEN TEST	Allows user to determine whether to transfer any load during an exercise or test cycle. Factory setting is "YES"	Press SET to select Yes or No.	Press SAVE to save setting.	

6.2 Programming

Screens 13-19 are used to customize the settings for your particular installation if the factory settings are not appropriate. Proceed to each screen using the SELECT button and follow the instructions in Table 6.1. Record the new settings in the last column in each section.

NOTE: All Factory settings are saved in non-volatile RAM and will be retained even if all power is disconnected from the PowerStay system.

NOTE: Enable/Disable switch must be left in Enable position for custom settings to be saved. To restore factory settings, slide the Enable/Disable switch to the DISABLE position, and press RESET button. See PHOTO M in 5.2 for Reset Button location.

NOTE: If all power is lost or disconnected from the switch (A/C utility, generator and battery) and the Enable/Disable switch was in the Disable position when power was lost, all custom settings will be erased. Once power is restored to the transfer switch, you must perform the initialization procedure in 5.2.3 prior to programming new custom settings.

SECTION 7 – TROUBLESHOOTING

Use the following troubleshooting guide to help diagnose transfer switch problems. The troubleshooting guide is divided into two sections based on the symptom. Common problems are listed with their possible causes. Refer to the corrective action column for the appropriate test or adjustment procedure. The section number in the right column lists the location of the test or adjustment procedure in this manual.

Make a thorough inspection of the transfer switch wiring to make sure that good wire harness and ground connections are made. Correct wiring problems before performing any tests or replacing any components.

7.1 Basic Troubleshooting

In case of generator failure or alarm, check the following BEFORE calling your installer:

1. Check generator fuel level and refill tank, if necessary (gasoline or diesel gensets).
2. Check generator oil level and refill reservoir if necessary.
3. Check generator battery for low or dead cell.
4. Check all power cord and cable connections.
5. Generator main circuit breaker switch (on genset) should be in the ON position.
6. Be sure slide switch on display panel is in the ENABLE position.

Refer to the following chart for troubleshooting tips.

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION	SECTION
A. Power Outage occurs but genset does not start <i>NOTE: Red "GEN FAILURE" light and alarm may be on</i> <i>NOTE: Press "SET" to silence alarm.</i>	1. ENABLE/DISABLE switch is in DISABLE position	1. Switch to ENABLE position	1.5
	2. Genset is in MANUAL mode	2. Set genset to AUTO mode	
	3. Genset does not crank	3a. Check genset battery and connections 3b. Check screen 17, AC LOSS DELAY. Genset will start only after this delay. 3c. Start genset in manual mode. If starts, check low voltage cable from transfer switch to genset.	6.1
	4. Genset cranks but does not start (Note: Switch will crank genset 3 times)	4a. Check genset fuel, spark plugs, refer to genset manual 4b. Check screen 15 for correct fuel type. Crank times change for each fuel type. 4c. Press "SET" to silence alarm and to initiate genset crank cycle again.	6.1 1.5
	5. No start signal from transfer switch	5a. Check voltage between CRANK and BATT (-) or (if CRANK/BATT(-) are not used) between ON/OFF and BATT(-) while switch is attempting to crank genset. Should be 10.5 to 14 Volts DC. 5b. Verify controller PULL UP/PULL DOWN jumper settings at JP1 and JP3. If incorrect voltage in 5a, replace controller board.	4.6 4.6
	6. Controller board may be defective		
B. Genset runs but switch will not transfer any or all loads <i>NOTE: Green "GEN RUNNING" light may be out</i> <i>(continued)</i>	1. Genset main circuit breaker tripped 2. Genset voltage out of range 3. Genset frequency out of range 4. Utility power restored, genset power not required.	1. Reset circuit breaker on genset 2. Check genset voltage in Screens 5 and 6. Switch will not transfer loads unless genset voltage is 100-140VAC. Correct genset voltage if out of range 3. Check genset frequency. Switch will not transfer loads unless genset frequency is 50-70Hz. Correct genset frequency if out of range 4. Switch will temporarily leave loads on generator. Wait for switch to complete	6.1

(B. Continued) Genset runs but switch will not transfer any or all loads	<i>Note: Green "LINE OK" light is on</i> 5. Total loads exceed genset continuous rating 6. Largest load exceeds genset continuous rating	normal cool down cycle (up to 10 minutes) 5. Not all loads may be powered all of the time by genset. Load Shedding program will cycle some loads and this is normal. If all loads need to run all of the time, remove some loads from switch or connect switch to larger genset. 6. Check continuous wattage of largest load; largest load must not exceed GEN POWER SHED LEVEL in screen 14. If exceeds, remove load from switch or connect switch to larger genset and reprogram switch.	
C. PowerStay system does not retransfer loads when utility power is restored	1. Utility voltage out of range 2. Utility frequency out of range 3. Main load center circuit breaker feeding A1/B1 circuit is off	1. Check utility voltage in Screens 2 and 3. Switch will not retransfer loads unless utility voltage is 100-140VAC. Wait for utility voltage to stabilize. 2. Check utility frequency. Switch will not retransfer loads unless utility frequency is 50-70Hz. Wait for utility frequency to stabilize 3. Turn on A1/B1 circuit in main load center	6.1 4.3.8
D. Genset continues to run after retransfer of loads to utility	1. Genset not accepting shutdown command 2. Genset cool down cycle running 3. ON/OFF signal from switch is ON after 10 minute cool down cycle	1. Check genset mode, set to AUTO 2. Wait 10 minutes for cool down cycle to complete. 3. Check voltage between ON/OFF and BATT (-). If over 0 Volts DC, controller board is defective, replace.	4.6
E. Genset does not exercise, or exercises, but does not transfer loads	1. ENABLE/DISABLE switch is in DISABLE position 2. Exercise programming incorrect 3. Genset exercise not frequent enough 4. Genset is in MANUAL mode 5. Genset cranks but does not start 6. Genset does not crank 7. No start signal from transfer switch 8. Controller board may be defective	1. Switch to ENABLE position 2. Check settings in screens 16 and 19 3. Reduce days between exercise in screen 16 4. Set genset to AUTO mode 5a. Check genset fuel, spark plugs, refer to genset manual 5b. Check screen 15 for correct fuel type. Crank times change for each fuel type. 6a. Start genset in manual mode. If starts, check low voltage cable from transfer switch to genset. 6b. Check genset battery and connections 7a. Check voltage between CRANK and BATT (-) or (if CRANK/BATT(-) are not used) between ON/OFF and BATT(-) while switch is attempting to crank genset. Should be 10.5 to 14 Volts DC. 7b. Check controller PULL UP/PULL DOWN jumper settings 8. If incorrect voltage replace controller board	1.5 6.1 6.1 6.1 4.6 4.6
F. Genset starts when utility power is on (continued)	1. Generator is in exercise mode. 2. Utility voltage out of range	1. Allow exercise cycle to complete. 2. Check utility voltage in Screens 2 and 3. Switch will not retransfer loads unless utility voltage is 100-140VAC. Wait for utility voltage to stabilize.	6.1

F. (Continued)	3. Utility frequency out of range	3. Check utility frequency. Switch will not retransfer loads unless utility frequency is 50-70Hz. Wait for utility frequency to stabilize	
	4. Main load center circuit breaker feeding A1/B1 circuit is off	4. Turn on A1/B1 circuit in main load center	4.3.8
	5. AC LOSS DELAY may be too short	5. Check AC LOSS DELAY – screen 17, lengthen (poor utility power quality may cause the genset to start intermittently even though there is no power outage)	6.1
G. Battery fails to charge, over charges or under charges <i>NOTE: Yellow “Low Battery” light may be on continuously</i>	1. Battery may be defective 2. Low voltage cable to genset damaged or not connected correctly 3. Incorrect battery charger output	1. Check BATTERY VOLTAGE on screen 10; a reading of 10.5 Volts DC or less after 24 hours of charging indicates that battery needs replacement 2a. Check cable connections, tighten. 2b. Check cable for damage, replace. 3a. Check battery charger fuse at F3, replace. 3b. Check battery charger output between BATT(+) and BATT(-), if less than 13VDC, replace controller board.	6.1 Photo K in 4.6
H. “CIR BREAKER X ALARM” message on LCD display <i>NOTE: Alarm may sound; press SET to silence alarm</i>	1. One or more circuit breaker(s) is (are) in the wrong position 2. One or more circuit breaker(s) is (are) defective 3. Computer controlling switch function locked up	1a. Determine circuit breaker to reset. Determine correct position. Move to correct position. 1b. Determine if circuit breaker fault is due to overload or short. Reduce load or fix short. 2. Perform “TEST GENERATOR”, screen 12 to determine if all circuit breakers engage. Replace defective breakers. 3. Reset computer by pressing RESET button on controller board.	6.1 Photo M in 5.2
I. Loads turn off and on when genset is running	1. Normal Load Shedding program is operating 2. Loads connected to switch significantly exceed genset capacity	1a. Reprioritize loads with more frequently used loads as higher prioritizes, see screen 18. 1b. Reduce total load connected to switch or temporarily do not use certain appliances 2a. Recommend total loads not to exceed 3x genset size 2b. Connect switch to larger genset and reprogram switch	6.1
J. LCD display is not responding to push button commands	1. Computer controlling switch function is locked up 2. Controller board is defective	1. Reset computer by pressing RESET button S1 on controller board. (Note: User custom programming is retained in ROM) 2. Replace controller board	5.2.3
K. GENERATOR FUEL ALARM message on LCD <i>NOTE: Alarm may sound; press SET to silence alarm</i>	1. Genset has exceeded FUEL ALARM TIME setting 2. FUEL ALARM TIME set wrong	1. To silence alarm, press “SET”. This also resets the GENERATOR RUN TIME clock to zero. Check fuel levels, replenish if required 2. Reset FUEL ALARM TIME (Screen 13) to more closely match genset fuel tank capacity.	1.5 6.1

L. There is a long delay between utility power loss and genset powering appliances	1. AC LOSS DELAY is set too long 2. Critical appliances shut off	1. Check AC LOSS DELAY setting – screen 17, adjust. 2. Install an Uninterruptible Power System (UPS) on critical appliances to ensure continuous power.	6.1
M. LCD display goes blank	1. LCD display goes blank after 2 minutes of no use 2. Brightness is set too low	1. Press “SELECT” to relight 2. Rotate Brightness knob counterclockwise to increase brightness.	1.5 1.5

SECTION 8 – MAINTENANCE AND SERVICE

8.1 Maintenance

To ensure that your generator will always be ready when you need it, it is important to start and run your generator regularly and keep the fuel tank filled with *fresh* fuel IF GASOLINE OR DIESEL. The PowerStay® system will automatically perform the exercise program at least once every 14 days (installer-programmable from 1 to 28 days). It is not necessary to turn off any circuits in the load center when supplying generator power to the PowerStay system, even when the utility power is operating normally. The system prevents backfeeding generator power to the utility and, conversely, utility power to the generator.

There are no user-serviceable parts inside the PowerStay system. For service, please contact your installer or Gen/Tran at 1-888-GEN-TRAN. NOTE: Gen/Tran warranty does NOT cover products that have been subject to misuse or unauthorized repair.

NOTE TO INSTALLER:

Please provide your company name and phone number on the inside front door so that the customer will be able to contact you for service-related issues.

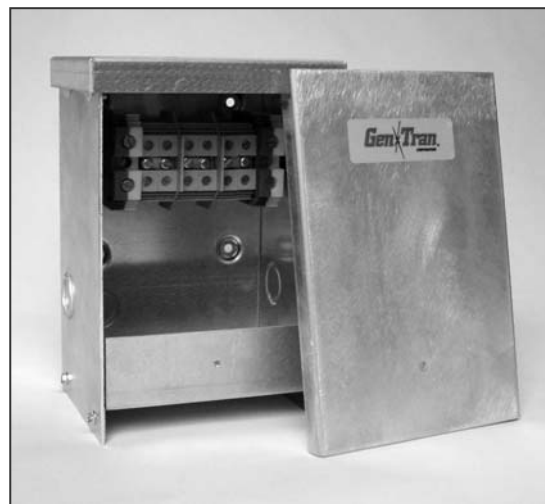
SECTION 9 – OPTIONAL ACCESSORIES

9.1 Hardwire Power Outlet Boxes from Gen/Tran

Your PowerStay® system has been designed to allow it to be hardwired to a remote power inlet box mounted on the exterior of a house or building. To order the appropriate remote power inlet box for your system, please call us at 1-888-GEN-TRAN. Your local electrical inspector may dictate what type of inlet box must be used for your particular installation. Each PowerStay® system has two "HOT" terminals for the "A" and "B" phase wires. The Neutral wire and Ground Wire from the generator should run to the appropriate marked terminals.

For Models 1000 and 1500, order Gen/Tran Part Number #40075 for a Hardwire Power Inlet Box.

For Models 3000 and 3500, order Gen/Tran Part Number #20125.



9.2 Replacement Parts

Contact Gen/Tran at 1-888-GENTRAN for a complete list of field-replacement parts.

Gen/Tran Corporation
P.O. Box 1001
Alpharetta, GA 30009
Toll free: 1-888-GEN-TRAN
Fax: 770-552-7756
www.gen-tran.com
Customer Service Hours - 8:30 a.m. until 5:00 p.m. Eastern Time, Monday – Friday

1/28/04. PN 620857 GT Rev A.

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U.S. Patent No. 09/335,950 and other patents pending.*